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TID/TAB - 18/66
3 March 1966

MEMORANDUM FOR THE RECORD

X1 SUBJECT: Trip Report [redacted]

1. On 14 February 1966 [redacted] accompanied [redacted] 25X
X1 [redacted] and review the status of the contract for the analytical plotting instrument referred to as the AP-3.

2. The AP-3 contract called for the development of an analytical plotting instrument which is basically the same as the existing AS11A plotting instrument. The AP-3 contract, however, incorporates some modifications to the basic AS11A design in order to increase the flexibility and versatility of the AP-3. These modifications are as follows:

a. Increase of optical magnification of 100X.

b. Optical subsystem capable of resolving 100 lines per millimeter.

c. Anamorphic corrections included in the optical subsystem.

d. Optical zoom subsystem.

e. Modification of coordinatograph mechanical drive system to include Beaver Ball Screws instead of the existing lead screws.

X1 3. When we arrived [redacted] and started discussing the status of the AP-3 we found that some aspects of the optics were in the research and development stage. [redacted] 25X
X1 Chief Engineer [redacted] was having design problems incorporating the anamorphic optics into the optical subsystem. He did, however, develop an optical system that would resolve the required 100 lines per millimeter. This optical system was set up on the optical bench. The AP-3 zoom system was not developed, but [redacted] design calls for a 25X
3:1 or 3.5:1 zoom system ratio. This will be incorporated into three optical ranges approximately 10-35, 30-65, and 60-100 magnification. For the high magnification range a 5 micron dot size was requested in the main lens cone. This will give a 25 micron dot size on the photo plate instead of having a

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X1 SUBJECT: Trip Report [redacted]

constant dot size in the main lens that would vary in size on the photo plate with the three different magnification ranges.

4. The proposal for the ballscrews was received at OMI on 15 February. This proposal was for three classes of screws:

Class 7 = 25 micron accuracy

Class 5 = 50 micron accuracy

Class 3 = 125 micron accuracy

We discussed this proposal and decided that a class 5, 50 micron accuracy over full length of the screw, would be sufficient for the AP-3 coordinatorgraph. A selection of a one inch pitch was also made for the screws. The Beaver proposal stated that 18 weeks should be allowed for construction of the screws. This should not delay delivery of the instrument, since the coordinatorgraph could be delivered with conventional lead screws. After delivery, the coordinatorgraph could then be retrofit inhouse with the ball screws.

X1 5. [redacted] we kept asking [redacted] to give a tentative delivery date for the AP-3. [redacted] finally stated that he felt he would be in much better position to give a delivery date on the AP-3 after he visits the ASP Meeting in Washington, D.C. in March. The construction and delivery of the instrument is solely dependent upon two factors. The first X1 would be [redacted] discussing with [redacted] what problems will arise, computer wise, by changing the zoom ratio from 2:1 to 3:1. The second would be [redacted] visit to X1 [redacted] and resolving the anamorphic and zoom optical subsystem problems [redacted] has encountered in trying to develop the anamorphic subsystem for the AP-3. 25X 25X 25X 25X

25X [redacted]
Production Section
Technical Analysis Branch

Distribution:
Orig. - Chief, TID/TAB
1 - Asst. P&D/Attn. [redacted] 25X
X1 1 - TAB/PS/[redacted]
1 - TAB/PS/
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